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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/715,635

11/18/2003

Vladimir Nikolaevich Samofalov

P03,0239

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10/18/2007

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EXAMINER

BLOUIN, MARK S

ART UNIT

PAPER NUMBER

2627

MAIL DATE

DELIVERY MODE

10/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/715,635

Applicant(s)

SAMOFALOV ET AL.

Examiner

Mark Blouin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-11,13-15,17,19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) 6,12,16,18 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-11,13-15,17,19 and 21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/19/04, 8/3/04, and 6/26/07</u> . | 6) <input type="checkbox"/> Other: ____ |

Detailed Action

Election/Restrictions

1. Claims 6,12,16,18, and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 10, 2007.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5,7-11, and13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Yuan et al (US 5,883,763).
3. Regarding Claims 1 and 2, Yuan et al shows (Fig. 2) a high gradient stray field magnetic field generator comprising: a magnetic flux circuit with a yoke (221,226) and a gap (G) in said yoke that produces a magnetic field; and an even number of permanent magnets (222,224) disposed in said gap, forming at least one magnet pair, with the respective magnetizations of the permanent magnets in each magnet pair oriented oppositely to each other, with substantially no open space between the permanent magnets in each pair, said permanent magnets producing a stray field that adds to said magnetic field (inherent).

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4. Regarding Claim 3, Yuan et al shows (Fig. 2) a stray magnetic field generator, wherein the permanent magnets (222,224) are adjacent to each other with no open space between the permanent magnets.

5. Regarding Claim 4, Yuan et al shows (Fig. 2) a stray magnetic field generator, wherein said even number of permanent magnets (222,224) disposed in said gap is two.

6. Regarding Claim 5, Yuan et al shows (Fig. 2) a magnetic write element for longitudinal recording on a recording medium having a surface (50), comprising: an inductive write element supplied with current to produce a basic magnetic field, said inductive write element having a gap (G) therein; and an even number of permanent magnets (222,224) disposed in said gap, forming at least one magnet pair with the respective components perpendicular to the surface of the recording medium of the magnetization vectors of the permanent magnets in each magnet pair oriented oppositely to each other, said permanent magnets producing a stray magnetic field, with a sum of said basic magnetic field and said stray magnetic field forming a write field for recording on said recording medium (inherent in function of structure).

7. Regarding Claim 7, Yuan et al shows (Fig. 2) a write head for writing on a pre-magnetized, moving, longitudinal medium (50), said medium having a surface and a recording layer that is pre-magnetized with a longitudinal pre-magnetization vector in a direction aligned with a direction of movement of said medium, said write head comprising: a single inductive write element (Fig. 2) supplied with current to produce a basic magnetic field, said inductive write element having a gap (G) therein; and two permanent magnets (222,224) disposed in said gap, with the respective components perpendicular to the surface of the recording medium of the magnetization vectors of said two permanent magnets oriented oppositely to each other, said

permanent magnets producing a stray magnetic field within the recording layer of said medium in a direction opposite to the direction of said longitudinal pre-magnetization vector, with a sum of said basic magnetic field and said stray magnetic field forming a write field for recording on said medium (inherent in structure).

8. Regarding Claim 8, Yuan et al shows (Fig. 2) a write head comprising a spacer (223) disposed between said permanent magnets (222,224), said spacer being comprised of spacer material and having a thickness, and wherein each of the permanent magnets is comprised of permanent magnet material, and wherein, the spacer thickness and material and the permanent magnet material are selected to produce the opposite orientation of the respective magnetizations of the permanent magnets by an anti-ferromagnetic exchange coupling between the permanent magnets (inherent in function of structure).

9. Regarding Claim 9, Yuan et al shows (Fig. 2) a write head for writing on a pre-magnetized, moving medium (50), said medium having a medium movement direction, a surface and a recording layer that is pre-magnetized with a perpendicular pre-magnetization vector in a direction perpendicular to the surface of said medium, said write head comprising: a single pole write element having a write pole (221), said write element being comprised of soft magnetic material and being supplied with current to produce a basic magnetic field diverging from the tip of said write pole; and two permanent magnets (222,224), disposed on opposite sides, along said medium movement direction, of said write pole with the respective components parallel to said medium movement direction of the magnetization vectors of the permanent magnets oriented oppositely to each other to produce a stray field in a direction opposite to the direction of said perpendicular pre-magnetization vector, with a sum of said basic magnetic field and said stray

magnetic field forming a write field for perpendicular recording on said recording medium (inherent in function of structure).

10. Regarding Claim 10, Yuan et al shows (Fig. 2) a write head for unidirectional overwriting on a medium magnetizable in a longitudinal direction, said medium having a surface and moving in a single medium movement direction, said write head comprising:
an inductive write element (Fig. 2) supplied with current to produce a basic magnetic field, said inductive write element having a gap (G) therein; a first magnet pair of two permanent magnets (222,224) disposed in said gap with respective magnetization components perpendicular to the surface of the recording medium of said two permanent magnets in said first pair oriented oppositely to each other, said first magnet pair producing a first stray magnetic field and the two permanent magnets thereof being composed of permanent magnetic material selected so that a sum of said first stray magnetic field and said basic magnetic field is sufficient to longitudinally magnetize said recording medium only when said inductive write element is supplied with a predetermined current, and to produce substantially no erasure in said recording medium when said write element is supplied with no current or a current that is negative compared to said predetermined current; and a second magnet pair (228,229) of two permanent magnets disposed upstream of said inductive write element relative to said direction of medium movement, with respective magnetizations of said two permanent magnets in said second magnet pair being oriented oppositely to each other in a direction perpendicular to the surface of the recording medium, with respective magnetizations of said two permanent magnets in said second magnet pair being oriented oppositely to the respective magnetizations of said two permanent magnets in

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said first magnet pair, said second magnet pair producing a second stray magnetic field having a strength sufficient to longitudinally magnetize said recording medium for recording on said recording medium (inherent in function of structure).

11. Regarding Claim 11, Yuan et al shows (Fig. 2) a write head comprising a spacer (223) disposed between said permanent magnets in each magnet pair, each spacer being comprised of spacer material (Col 5, lines 17-22) and having a thickness, and wherein each of the permanent magnets (222,224 and 228,229) is comprised of permanent magnet material, and wherein, in each magnet pair, the spacer thickness and material and the permanent magnet material are selected to produce the opposite orientation of the respective magnetizations of the permanent magnets in that magnet pair by an anti-ferromagnetic exchange coupling between the permanent magnets in that magnet pair (inherent in function of structure).

12. Regarding Claim 13, Yuan et al shows (Fig. 2) a write head for bi-directional overwriting in a longitudinally magnetized recording layer of a recording medium having a surface, comprising: a first inductive write element (221) supplied with current to produce a first basic magnetic field, said first inductive write element having a gap (G) therein, and a first magnet pair (222,224) of two permanent magnets disposed in said gap of said first inductive write element with respective components perpendicular to the surface of the recording medium of the magnetization vectors of vectors of said two permanent magnets in said first magnet pair oriented oppositely to each other, said two permanent magnets in said first pair producing a first stray magnetic field, with a sum of said first basic magnetic field and said first stray magnetic field forming a first write field for recording on said recording medium; a second inductive write element (226), disposed next to said first inductive write element, supplied with current to

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produce a second basic magnetic field, said second inductive write element having a gap (G) therein, and a second magnet pair of two permanent magnets (228,229) disposed in said gap of said second write element with respective components perpendicular to the surface of the recording medium of the magnetization vectors of said two permanent magnets in said second magnet pair oriented oppositely to each other, said second magnet pair producing a second stray magnetic field, with a sum of said second basic magnetic field and said second stray magnetic field forming a second write field for recording on said recording medium; and the respective magnetizations of the two permanent magnets of the first magnet pair being oriented oppositely to the respective magnetizations of the two permanent magnets of the second magnet pair.

13. Regarding Claim 14, Yuan et al shows (Fig. 2) a write head comprising a spacer (223) disposed between said permanent magnets in each magnet pair, each spacer being comprised of spacer material (Col 5, lines 17-22) and having a thickness, and wherein each of the permanent magnets (222,224,228,229) is comprised of permanent magnet material, and wherein, in each magnet pair, the spacer thickness and material and the permanent magnet material are selected to produce the opposite orientation of the respective magnetizations of the permanent magnets in that magnet pair by an anti-ferromagnetic exchange coupling between the permanent magnets in that magnet pair (inherent in function of structure).

14. Regarding Claim 15, Yuan et al shows (Fig. 2) a write head for bi-directional overwriting of a perpendicularly magnetized recording layer of a recording medium moving in a medium movement direction, comprising: a first single pole (221) write element having a write pole, said first single pole write element being composed of soft magnetic material and being supplied with current to produce a basic magnetic field diverging from the tip of said write pole,

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and a first magnet pair of two permanent magnets (222,224) respectively disposed on opposite sides, along said medium movement direction, of said write pole with respective components parallel to said medium movement direction of the magnetization vectors of the two permanent magnets in said first magnet pair oriented oppositely to each other, said permanent magnets producing a stray magnetic field, with a sum of said basic magnetic field and said stray magnetic field forming a write field for perpendicular recording on said recording medium; a second single pole write element (226) having a write pole disposed next to said first single pole write element, said second single pole write element being comprised of soft magnetic material and being supplied with current to produce a basic magnetic field diverging from the tip of said write pole, and a second magnet pair of two permanent magnets (228,229) respectively disposed on opposite sides along said medium movement direction, of said write pole of said second single pole write element, with respective components parallel to said medium movement direction of the magnetization vectors of the two permanent magnets in said second magnet pair oriented oppositely to each other, said permanent magnets producing a stray magnetic field, with a sum of said basic magnetic field and said stray magnetic field forming a write field for perpendicular recording on said recording medium; and the respective magnetizations of the two permanent magnets in said first magnet pair being oriented oppositely to the respective magnetizations of the two permanent magnets in said second magnet pair.

Allowable Subject Matter

15. Claims 17,19, and 21 are allowed.

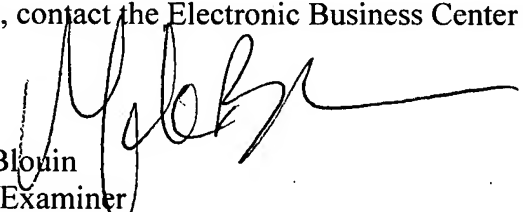
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Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Blouin whose telephone number is 571-272-7583. The examiner can normally be reached on M-F from 6:00 to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Bill Korzuch, can be reached on 571-272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Mark Blouin
Patent Examiner
Art Unit 2627
October 10, 2007